

WHAT IS CLAIMED IS:

1. An exposure apparatus which draws a pattern on a substrate with electron beams, comprising:

a substrate stage which supports the substrate;

5 a transfer stage which moves with said substrate stage on board;

an electromagnetic actuator which moves said substrate stage relative to said transfer stage;

a first measurement system which measures a
10 position of said transfer stage;

a second measurement system which measures a position of said substrate stage;

a controller which controls said electromagnetic actuator on the basis of measurement results obtained
15 by said first and second measurement systems;

a deflector which deflects electron beams with which the substrate is irradiated; and

a filter which performs filtering for a measurement result obtained by said second measurement
20 system and supplies the filtered measurement result to said deflector.

2. The apparatus according to claim 1, wherein

said second measurement system measures rotation of said substrate stage in addition to the position of
25 said substrate stage, and

said deflector adjusts deviations of electron beams on the basis of the position and rotation of said

substrate stage obtained by said second measurement system.

3. The apparatus according to claim 1, wherein said second measurement system includes

5 a first sensor which measures a position of said substrate stage with reference to a predetermined reference position, and

a second sensor which measures a position of said substrate stage relative to said transfer stage,

10 said controller controls said electromagnetic actuator on the basis of measurement results obtained by said first measurement system and the second sensor, and

said filter performs filtering for a measurement
15 result obtained by the first sensor to supply the filtered measurement result to said deflector.

4. The apparatus according to claim 3, wherein said second sensor is arranged to measure a relative position of said substrate stage in the vicinity of
20 said electromagnetic actuator.

5. The apparatus according to claim 1, wherein said substrate stage has a substrate holder on said substrate stage, said electromagnetic actuator and the substrate are arranged on opposite sides of a
25 barycenter of said transfer stage in a Z-axis direction.

6. The apparatus according to claim 1, wherein said

filter includes a band-limiting filter which blocks a predetermined band.

7. The apparatus according to claim 1, wherein said electromagnetic actuator includes an electromagnet as a
5 driving source.

8. The apparatus according to claim 1, wherein said electromagnetic actuator includes a linear motor.

9. The apparatus according to claim 1, wherein said electromagnetic actuator is coated with an
10 electromagnetic shield.

10. A device manufacturing method comprising:

a step of drawing a pattern on a substrate coated with a photosensitive agent using an exposure apparatus as defined in claim 1; and

15 a step of developing the substrate.